For you to consider…

EASTHAM WIND FACTS Source: Energy Committee		EASTHAM WIND TRUTH Source: http://www.easthamwindtruth.com/

Proponents		Opponents
The Current Status: The Board of Selectmen accepted the Feasibility Report in June '06 and charged the Energy Committee (EEC) with taking all necessary actions to prepare a Request for Proposal (RFP) for up to four large, mega-class wind turbines in North Eastham. Starting last August, the EEC has conducted over a dozen public outreach meetings with a variety of stakeholders hearing project feedback. In anticipation of certain concerns, the committee is conducting or is planning a series of studies. FAA, Avian Impact, Environmental Permitting, Land Ownership, and Shadow Flicker studies are underway or complete. A pre-construction noise impact study will be complete by May '07. EEC is evaluating an Ice Shedding Study. If the need occurs, we will schedule more studies. Visual simulations have been prepared and more are under way. EEC recommended (but did not write) a zoning by-law for wind energy facilities. Recently, a new Massachusetts Division of Energy Resources released a model by-law for use by cities and towns. The EEC supports this by-law as written.		**The Current Status:** A feasibility study funded by Massachusetts Technology Collaborative has been completed. The Eastham Energy Committee is moving forward with the project. They have **proposed an amendment to the zoning bylaw** that will be voted on at the May 7, 2007 Town Meeting. The town proposed bylaw is **very weakly worded** and provides no protection for the town and especially the nearby neighborhoods. Some concerned residents and homeowners have submitted an alternate zoning bylaw amendment that should also be on the warrant for the May Town meeting. The Eastham Planning Board will hold a hearing on the town's proposed bylaw on Monday, February 26, 2007 at 5:00 PM at the Town Hall. To see how the proposed zoning bylaw should be amended to actually protect the residents and taxpayers**: Click here** New!
The Project: The town will lease land at the site to a private wind developer who will buy, install, operate, maintain, and de-commission the turbines. The developer will pay for all of these elements at an estimated cost of over $12 million. Up to four large, 1.5 to 2.0 Megawatt wind turbines will be installed at locations spread across the nearly 100 acre site. EasthamWind will provide clean power for 1,500 to 1,800 Eastham homes. The height of the top of the blades will be a maximum of 400 feet or as low as 328 feet. The turbine towers (262 feet) will be the same height as the Provincetown Monument. The blade-tip length will add an additional 131 feet. The cell tower is 197 feet. The turbines will hardly be visible from Provincetown, Chatham, or Barnstable. EEC will install a balloon to simulate visualization. No one knows yet if an electrical substation will be required.		**The Project:** The town will lease land at the site to a private wind developer who will install and operate the wind farm complex. Four 1.5 Megawatt wind turbines will be installed at locations spread across the site. The height to the top of the turbine blades will be approximately 400 feet. That is as tall as a 40 story building! The turbines will be visible as far away as Provincetown to the north, Chatham to the south and Barnstable to the west. An electrical substation with oil filled equipment will be required on site to connect the turbines to the electrical grid.

The Site: The Eastham Energy Committee recommended and the Board of Selectmen accepted the North Eastham site off Nauset Road adjacent to the Cape Cod Rail Trail. On this site is a 197 ft cell tower, two active gravel pits, a town stump dump & composting area, Nstar transmission lines, and Tilcon's abandoned buildings, and it is adjacent to busy Route 6 and the Eastham gun club. It is zoned as Water Resources Protective District- G. The EEC is working with the Water Resources Advisory Board to insure compatibility with their project to bring municipal water to the town. There is no available evidence indicating that wind energy construction, in general, has any permanent or temporary effect upon an area's groundwater resources. The project does not require a mandatory Cape Cod Commission Development of Regional Impact (DRI) review. There are no current zoning provisions that permit, prohibit or control wind turbines. We need a new zoning by-law to protect our residents. The project is adjacent to wooded residential neighborhoods beyond the setbacks recently established in the Massachusetts Division of Energy Resources model by-law which the EEC supports as written.		**The Site:** The Eastham Energy Committee has recommended a site on town owned land in North Eastham on Nauset Road adjacent to the Cape Cod Rail Trail. This land is currently zoned as a Water Resource Protection District and is designated on the **zoning map** as Zone G. It is the only land in town so zoned. Under the current zoning bylaw, no commercial or industrial development is allowed in Zone G and residential development is strictly limited. The location is nearby to residential neighborhoods that will be heavily impacted by the project.
IMPACTS: **Visual -** Current visual simulations demonstrate the actual visual impact. Although large, the turbines will not be visible from Nauset Light Beach. Dense tree coverage will limit visibility even from adjacent neighborhoods. We are developing another dozen simulations to further analyze the visual impact. In addition, EEC will install a balloon to simulate visualization. The FAA aeronautical study revealed that the structures do not exceed obstruction standards and would not be a hazard to air navigation. Click here to see the site.		**IMPACTS:** **Visual-** Four huge wind turbines with their swirling blades will have a huge visual impact. The blades are as big as the wings on a Boeing 747 airliner. The structures dwarf anything in the area. The Pilgrim Monument in Provincetown is 252 feet tall. These turbines are half again as tall. This installation will change the look of Eastham dramatically. The wind turbines will be obstructions to air navigation and will need to have bright flashing strobe lights on top of them. **To see a wind turbine similar to those being proposed for Eastham**: **Click here**
Noise – Turbines do produce noise. If they produced more than double the ambient sound levels at many residences, they would violate the MA DEP noise control regulations and would not be tolerated. They are only allowed to exceed average ambient levels by 10dB. The EEC is commissioning a pre-construction noise impact study including infrasound and cumulative sounds from four turbines. Sound emissions from wind turbine have been one of the more studied environmental impact areas in wind energy engineering. Sound levels can be measured, but the public's		**Noise -** The neighborhoods near the site are quiet residential locations. From most of these homes you can hear the faint sound of the ocean waves, especially at night. Will it be possible to sleep with the windows open once the turbines are installed? Contrary to the claims of many wind power proponents, **wind turbines do make noise** and large industrial wind turbines make lots of noise. **The low frequency sounds generated can be especially annoying**. Installation of the turbines could more than double the ambient sound levels at many residences. One of the

perception of the acoustic impact of wind turbines is, in part, a subjective determination. Tony Rogers of UMass RERL indicates that "infrasound is emitted from modern wind turbines, but is NOT a problem." Dr. Geoff Leventhall stated quite categorically that there is no significant infrasound from current designs of wind turbines. He said "To say that there is an infrasound problem is one of the hares which objectors to wind farms like to run. There will not be any effects from infrasound from the turbines." The neighborhoods near the site are wooded residential. U.S. EPA estimates the outdoor day-night average sound levels of such sites at about 50dB measured at various locations. Tony Rogers estimates that a Vestas V80 would produce less than 50dB at 600 feet, **without any trees**….and most neighborhoods have a tree barrier. The closet house would be 660ft. Clearly, the noise impact study will determine the real Eastham noise level facts.		turbines would be located within 600 feet of a home. Under the bylaws proposed by the town, the neighborhoods near the wind turbines will not be adequately protected from noise .
Shadow Flicker - Trees cause shadow flicker and so do turbines. The Shadow Flicker impact study is nearly complete. Shadow flicker will be minimal and not a nuisance for residents due to the predominant wind direction, the abundant tree cover, Cape Cod weather, and the sun's angle here. The highest levels will be on the west/northwest side between 6am and 8am. Southside neighbors will experience little or no shadow flicker.		**Shadow Flicker -** Large wind turbines can cause a highly annoying effect caused when rotating wind turbine blades cast moving shadows on residents living nearby. Residents living 1/4 to 1/2 mile from wind turbines report being bothered by shadow flicker. It can be disorienting and highly annoying to individuals. There are documented reports of people suffering nausea and migraines from it. Wildlife has been known to the flee the area when subjected to shadow flicker. The shadows caused by the morning sun will likely be troublesome to residents to the west of the site. Sunrises and sunsets, when this problem is most severe, become times of the day to avoid being near windows or outdoors, rather than treasured.
Safety – MA Division of Energy Resources (DOER) says: "This model by-law recommends that minimum setbacks are established to protect public health and safety, and adjacent property interests in the unlikely event of turbine collapse, broken rotor blades, etc." And "It should be emphasized that modern wind turbines are engineered so that risk of collapse is minimal." And "the risk of ice being thrown from blades is typically very minimal." At 750 feet, the danger of an ever-present-person being hit by ice fragments is about 10^{-6} – one-in-a-million. The failure frequency for turbines parts averages 10^{-4}, one-in-ten-thousand per year. • Contrary to the alarming photos and statements, there have been no reported U.S. PUBLIC injury or deaths, EVER! • There are no known U.S. liability or injury insurance claims ('04).		**Safety -** Large wind turbines have a spotty safety record. The blades and towers can and do fail. **They can also shed ice that can fall at great distances from the tower**. **The adverse health effects of industrial wind turbine installations** are just now being recognized. Properly sited wind turbines require significant separation from residential and recreational areas.

Environmental - The environment around wind turbines is strictly protected before, during, and after construction by federal, state and local laws, regulations and permitting. The Avian impact study is complete and reports the impact as minimal. The Environmental permitting study is nearly complete and there are no red flags. The site does not fall under the jurisdiction of the MA Wetlands Act. There is no available evidence indicating that wind energy construction, in general, has any permanent or temporary effect upon an area's groundwater resources. Wind is one of the healthiest energy options, and the most compatible with animals and humans.		**Environmental -** The site is designated as a Water Resource Protection Area. The area is critical to the continued viability of the drinking water wells in the area. That's why it was designated as protected. It is also the habitat of numerous species of birds and animals. Construction of the wind turbines will require use of heavy construction equipment such as power shovels, backhoes, bull dozers, trucks and cranes. Roads to interconnect the turbine locations and to bring equipment to those locations will be required. This activity will be tremendously disruptive to any animals and flora in the area. The operation of the turbines and associated electrical equipment will require oils and other materials which are hazardous to the environment. One careless spill could cause irreparable damage to the site and to the underlying aquifer.
Economic - If Eastham's financial package was similar to Orleans', we would be able to completely offset the entire cost of electricity for the town government (currently about $170,000 per year) and more, saving taxpayers millions of dollars the over the life of the project. The Feasibility Report lists: • a PILOT payment of $80,000 per year • an annual land lease of 5% of owner revenue. In addition, we would receive: • a percent of electricity sales to the grid (now $.05 per KWh • a percent of the sale of RECs (now $.05 per KWh) and other incentive certificates. All U.S. studies suggest that fears of falling property values in the proximity of wind energy projects in the United States are not supported by actual evidence. Hull indicates that any report that states that any values in Hull have declined due to Hull Wind 1 or 2 are total fabrications. International studies from Denmark, England, Scotland & Ireland and Australia reached the same conclusion: The facts are that the claim that wind development will affect property values is unsupported.		**Economic -** The Eastham Energy Committee claims that this project will be economically beneficial to the residents and homeowners. They are claiming that the town will derive $170,000 a year from the project. We dispute these claims. Furthermore, there is no guarantee that the town will use the revenue to reduce the property taxes in town. To the contrary, it may be seen as a way for the town to increase spending without having to increase taxes! The assessed value of the homes within 1/2 mile of the site is about $118,000,000. Construction of this project could cause the value of the homes within 1/4 mile of a turbine to drop by 30%. Homes between 1/4 and 1/2 mile from a turbine could lose 10% of their value. If this happens, the homeowners in the neighborhood of the project will take a whopping $18,000,000 hit to their pocketbooks. This drop in property values will also reduce the town's annual tax revenue by more than $86,000. So the $170,000 in expected annual revenue could really only be a net amount of $84,000. The present value of $90,000 a year at 10% interest over the 15 year life of the project is only $640,000. Should the property owners in North Eastham be forced to give up $18,000,000 in property value so the town can receive $640,000 worth of revenue over 15 years? Clearly, this project isn't the bargain that the promoters claim it is!

Story of Canadian family (Daniel d'Entremont) driven from their home by wind turbine noise: **Fact:** A recent post-construction environmental noise assessment determined that the impact of the wind turbine generators complies with the Ontario Ministry of Environment Criteria and that infrasound was not an issue.		Story of Canadian family driven from their home by wind turbine noise. (Wind farm noise drives family from home; Man claims inaudible sound made family sick. Mr. d'Entremont blames the turbines for sending low-frequency sound into his old house, located about 400 metres from the nearest turbine.)
Dr. Geoff Leventhall's rebuttal to articles on the health effects of industrial wind development by Dr. Nina Pierpont M.D. PhD.:		**Articles on the health effects of industrial wind development by Dr. Nina Pierpont M.D. Phd.**
Do wind turbines cause health effects from low frequency vibrations and "infrasound"? "No, they don't. Some people have claimed that modern wind turbines emit extremely low frequency noise (LFN), also known as "infrasound" (from 1-2 Hz). There is no scientifically reliable documentation to support this claim."		
Tony Rogers said: "I have looked at a variety of infrasound measurements from wind turbines and have personally concluded that Leventhall is completely correct that infrasound should not be a problem with a modern wind turbine."		